GARDEN AND FOREST.

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The Coming Forestry Congress.

TO those persons who have been impressed for years with the necessity of checking the needless waste of our forests, the growth of a correct public sentiment in this direction seems painfully slow. They have seen the great lumber industry of the country carried on with extravagance beyond precedent, without any regard for the character of the plants which are to occupy the land after it has been stripped of its trees. They have seen our great forests of such valuable timber as black walnut, white ash, yellow poplar, and, above all, white pine, depleted, until the supply is dangerously small, for the seeds of these trees if sown this year would hardly produce sawlogs before the end of the twentieth century. They have seen fires annually destroying league after league of the finest timber in the world, killing the young growth and lessening the value of much that is left standing and turning the fertile soil, which must be relied upon to make future forests, into sterile wastes. They have seen great tracts of Government timber-land fraudulently acquired and stripped of its trees, with hardly an effort made to check the robbery, so that, altogether, it is difficult for a thoughtful man or woman to contemplate the present condition of our forests without feelings of depression and humiliation.

And yet it must be admitted that some progress has been made. During the past two years more than thirteen million acres of public timber-land have been reserved by proclamation of the President. Laws looking toward the saving of the woodlands, and which will prove of greater or less advantage, have been passed recently in several of the states. In New Hampshire the axes of the lumbermen are plied just as vigorously as ever, but the people of that state and of other states are all beginning to learn something of the value of the White Mountain forests, not only for their wood-products, but as an inviting place for summer refreshment, and this knowledge is growing every year. In this state a law relating to the Adirondack forest has been passed which is not altogether satisfactory, and a commission, whose intelligence and effectiveness have yet to be proved, has been appointed. It is true that new railroads have penetrated the Adirondacks, and these offer increased facilities for marketing the timber there, but the owners of the great hotels in the wilderness and people who are interested in the region as a summer resort are beginning to learn that when the forests go their business is ended. Besides this, large tracts are reserved for private use, and it looks as if the time was not very far distant when the waste of timber in the north woods would receive some check. Pennsylvania has passed a liberal act which attempts to unite every interest which touches forestry production in the state, and it is noteworthy that the bill passed both houses almost unanimously, while a bill four years ago, which involved no expense to the state, never came out of the committee in the House of Representatives to which it was referred.

These are small gains, it is true, but they mark a change from the utter apathy which seemed to prevail throughout the country ten years ago. It cannot be said that even the beginning of a rational forest-policy is anywhere visible, and, therefore, the necessity for constant discussion which will lead to popular enlightenment is still pressing. It still remains true that such a policy cannot be developed and adopted in advance of enlightened popular opinion, and, therefore, every effort to disseminate correct views on this subject ought to be welcomed and encouraged. We are, therefore, glad to announce that an international conference is to be held in connection with the World's Columbian Exposition, whose purpose it is to set before the people the present condition of the forests of this country and to impress upon them the need of establishing some national system of forestry. To this end experts in forestry have been invited to be present, and men who have studied this subject abroad will state what years of experience have taught there.

The organization known as the World's Congress Auxiliary is recognized by the Government and partially supported by it. This body will provide a place of meeting for those interested in forestry; it will defray the expenses of the meetings and will publish and distribute its proceedings. Secretary Morton, ex-Secretary Noble and other prominent persons have agreed to be present. The affairs of this forestry congress are in charge of a committee which has been nominated by the American Forestry Association, and the meetings will be held in one of the large assembly halls of the Art Palace, situated in Lake Front Park, in the business part of Chicago, on the 18th and 19th of October. The co-operation of individuals and societies throughout the country and the world is desired, and correspondence and suggestions from all interested persons are invited. Mr. B. E. Fernow, Chief of the Forestry Division in Washington, is president of the committee, and Mr. J. D. W. French, of 160 State Street, Boston, Massachusetts, is the vice-president, to whom all applications for documents or explanatory information should be made.

IT seems hardly necessary to repeat what we have so often stated about pruning shrubs with a view to the production of flowers, namely, that those which produce flowers on the wood made the previous year, among which the Honeysuckles, Forsythias, early Spiræas, Lilacs, Viburnums, Deutzias and Philadelphus are prominent examples, should receive their severest cutting soon after the flowering season is over. This stimulates the growth of new wood which will bear flower-buds for the next spring. Of course, if these shrubs are cut back in the autumn or winter, or in early spring before they bloom, the flower-buds are removed. On the other hand, late-blooming shrubs, like the panicled Hydrangea, Hibiscus and Lespedeza, should be cut in hard in early spring so that they may make a strong growth of wood and buds for flowers which open in late summer and early autumn.

This is the most elementary of rules, and since we prune

for many other purposes than the increase of flowers, attention must be given to this work during all the growing season. Surplus wood and suckers should be thinned out in summer, as clean-cut wounds will heal more quickly then than those made in cold winter. Many trees and shrubs which bleed freely, like the Yellow-wood and Maples, heal better if pruned when in full leaf. Coarse-growing shrubs should always be restrained so that they do not smother out others of more delicate habit. Shoots which are making too strong a growth should be stopped in midsummer by pinching, which will not only preserve the symmetry of the plant but will encourage the growth of flower-buds and fruit in full-grown specimens, and will induce smaller ones to yield flowers and fruit at an earlier age than if left to themselves. Some trees which are tender if left unpruned will ripen up their wood and endure the winter if the tips and branches are pinched back in summer. This is especially useful in wet seasons when the branches continue to grow until cold weather. This pinching will also enable many kinds of trees and shrubs to ripen their fruit better, so that altogether this summer work of carefully removing superfluous interior branches which cross each other and exclude the light and air from the head of the tree or shrub, the shortening-in of overstrong branches which mar the symmetry of the tree, the rubbing away of surplus buds and pinching back of branches in the summer, are among the most important of garden operations.

The Chinese Wistaria.

THE Chinese Wistaria was introduced into European gardens in the early part of this century. Its vigorous constitution, its adaptability to a wide range of climate, its abundant flowers and graceful habit have made it a universal favorite. This year it has been especially beautiful in Central Park, where it covers many arbors and shelters. On the top of the great Pergola, near the lawn, which is nearly two hundred feet in length, the flowers seemed to be massed in great heaps, and they hung over the edge in profuse wreaths and garlands for the entire length of the structure. After the flowering season of the plant is over its foliage covers these shelters with thick and graceful, but not too heavy, masses. The Wistaria is also seen to excellent advantage when it climbs into the open heads of deciduous trees. This year a Linden in the park, which was completely, though loosely, draped with the abundant lilac clusters of flowers, looked like a large bouquet. The Wistaria is often used for this purpose in Japan, and several of Mr. Parsons' most interesting studies represent trees festooned with its flowers. It is very useful also in forming effective arrangements of color in the autumn. When climbing over a mass of Staghorn Sumachs or other trees, whose foliage turns to scarlet or other bright colors, its green leaves do much by their contrast to increase the effectiveness of the mass.

When young plants of Wistaria are cut back to a height of six or eight feet and pruned in for some years, the stem will stiffen until it is able to stand alone, and the top will spread out into a broad head, and in this way it becomes an attractive specimen. When planted in tubs, and trained to this erect form, the Wistaria, when in flower, makes an excellent plant for conservatory decoration. The illustration on page 256 is from a photograph, taken by Mr. Paul Dana, of a Wistaria trained in this manner, which is growing at Dosoris. There are some other species and varieties of Wistaria, probably the most promising of which are the blue and white forms of W. multijuga, which has proved perfectly hardy as far north as Massachusetts, and bears racemes of fragrant flowers from two to two and a half feet in length. W. multijuga, which is probably a native of China, although its origin is obscure, promises to be a great addition to our gardens. It flowers nearly two weeks later than W. Sinensis, and the flowers exhale a delightful fragrance, in which particular it differs from the other species.

Our Coniferous Forests.

AT the Nurserymen's Convention, held in Chicago last week, Mr. Robert Douglas read a paper, from which we take the following extracts:

I well remember sailing up the St. Lawrence in May, 1836, when in sight, for the first time, of an indigenous evergreen forest, saying to myself, "Well, now I can ramble in the woods to my heart's content! No gamekeepers here! No finger-boards cautioning me to beware of man-traps and spring-guns!" We reached Quebec May 21st in the midst of the spring fleet, for even at that early day vessels came from Great Britain—coming in ballast, and going back laden twice a year with lumber, which was brought from the interior in rafts to Quebec.

In 1837 I traveled from Quebec to Niagara Falls, and forests were everywhere in sight. Farmers were girdling the trees and growing crops among the gaunt dead Pines, which looked like goblins on a moonlit night.

On my way to Vermont in 1838 I saw fields fenced with White Pine stumps only a little way east of Troy, New York. East of Bennington, Vermont, they were cutting down the timber and making it into charcoal. On the east side of the Green Mountains farmers were felling the trees in wind-rows and burning them. During the spring of 1844 I traveled through virgin forests in Michigan, and at that time the northern part of that state was covered with White Pine, and the same was true of northern Wisconsin, the Michigan peninsula and Minnesota, and I never imagined that lumber, especially pine lumber, would ever become scarce in this country; but when I traveled to the Pacific coast in 1849, and passed through more forest in the first four miles from the shore of Lake Michigan than I found all the rest of the way to the base of the Sierra Nevada Mountains, I became convinced then that the time was not far distant when the country would regret the wholesale destruction of its noble Pine-forests. In 1868, and many years since that time, I have traveled in Colorado and other far western states, and found many magnificent coniferous forests, but the axe and the fires have destroyed them, and valuable species will never grow there again. For several years I have longed for a sight of such forests as I saw long ago, but was not gratified until last year, when, in company with my son, I spent the late summer and fall in the forests of Washington, Oregon and northern California. We spent day after day for two weeks around Puget Sound in the immense forests, where the trees were 100 to 200 feet taller than the tallest trees on the Atlantic slope. Here history is repeating itself, and I was laughed at for my forebodings, as I had been laughed at on this side of the mountains a generation ago.

Where will you find your coniferous forests on the five-hundredth anniversary of the discovery of America? My belief is that they will stand where the forests have been cut down and burned over, for Nature is more provident than man, and will do the best she can, but the conifers that Nature will produce in these burned and desolated regions will be neither ornamental nor useful. The same fires that sweep away every vestige of trees and seeds of the valuable evergreens open the persistent cones of the scrub Pines that hang unopened for fifteen years at least, according to my observation, waiting for, what is to them, the friendly fire. The Wisconsin Gray Pine (Pinus Banksiana) is already taking the places of the nobler Norway and White Pines. P. contorta is covering the burned lands in Colorado and the burned Pine-lands in the Rocky Mountain districts, and other species of worthless Pines occupying the burned Pine-lands both in the far west and in the south. But even these worthless Pines have to fight with other comparatively worthless trees for a foothold, for the Aspens and other Poplars, the Birches and like kinds, producing seeds that are carried long distances by the winds, find the burned lands in the finest condition for germinating delicate seeds, and divide the land with the Thistle, which delights in burned land.

Darwin says the Oaks are driving the Pines to the sands, but without forest-fires the Oaks would make little headway. There are Oaks in every Pine-forest that I have explored; fires cannot destroy them; they are gaining ground continually, as far as my observation goes. There are other causes operating against valuable evergreens. Nature has a vast family to feed, aside from producing seeds to continue the species. Passenger pigeons, mourning doves and other birds and squirrels must be fed. The White Pines produced millions of seedlings when bearing trees were in plenty; the birds are taking all the seeds where the trees are scarce.

Then again, evergreen trees with delicate foliage are not able to compete with the coarser kinds; they are scorched and

killed if the sun reaches the seedlings the first year, and they damp off if in too deep shade. I noticed this especially in East Tennessee and in North Carolina, where I had abundant time and could see the advantage the Old-field Pine had with its coarse foliage.

While passing through a forest of Pinus Lambertiana, the large Sugar Pine, I noticed that the seedlings and young trees were remarkably scarce, while seedlings of other species, not devoured by birds, were creeping in around the edges in vast numbers. The old trees were bearing, in quantity, huge cones, ten to fifteen inches long and twelve inches in circumference. Squirrels, wild pigeons and Clark's crow were feeding on the seeds. The cones hang from the utmost point of the upper branches, bending the limb with their weight. The large squirrels go from branch to branch, cutting off the cones, and then gather them together to be broken up at the base of the trees, and leave, in many instances, a bushel of cut-up cones at the base of the tree without a single seed that I could find.

In my rambles through the Redwoods I noticed the great scarcity of seedlings; indeed, I never found ten seedlings in a six hours' ramble, except where there had been new cutting and filling on a narrow-gauge railway. Examining the seeds carefully, I found ninety-eight per cent. abortive, but this tree has an advantage over all other conifers, in throwing up a circle of young trees around the base of each cut-down tree, and is therefore better prepared to hold its own than any other conifer with which I am acquainted. When we reached the groups of Brewer Spruce, Picea Breweriana, the scarcity of seedlings and small trees was remarkable, but the next morning fully explained the cause. Squirrels were busily employed cutting off the cones. Grossbeaks and crossbills were tearing the cones, and the little snowbirds that are so troublesome on our evergreen seed-beds were picking up the scattering seeds. Now, since all of these trees known to exist do not number over one hundred, in what other way can we account for the scarcity?

Yes! on the five-hundredth year of the discovery of this continent there will be choice evergreens in America, but, like the buffalo, the elk and the antelope, they will be confined to public parks and private grounds.

Notes on the Forest Flora of Japan.—XV.

CORNUS, which is exceedingly common in North America, where sixteen or seventeen species are distinguished, is less abundant in Japan than in the other great natural botanical divisions of the northern hemisphere. In the northern regions of eastern America different species of Cornus often form a considerable part of the shrubby undergrowth which borders the margins of the forest or lines the banks of streams, lakes and swamps. In Japan these shrubby species, or their prototypes, do not exist. High up among the Nikko Mountains, on rocks under the dense shade of Hemlocks, we saw a few dwarf sprawling plants of the Siberian and north China Cornus alba, but did not encounter in any other part of the empire a shrubby Cornel. High up on these mountains, too, the ground is carpeted with the little Bunch-berry, the Cornus Canadensis of our own northern woods, which is also common in some parts of Yezo and on the Kurile Islands, where a second herbaceous Cornel, with large white floral scales, Cornus Suecica, is found. This is a common plant, too, in all the boreal regions of North America from Newfoundland and Labrador to Alaska, and in northern Europe and continental Asia. Of arborescent Cornels the flora of Japan possesses only two species, Cornus Kousa and Cornus macrophylla, and neither of these is endemic to the empire.

Cornus Kousa represents in Japan the Cornus florida of eastern America and the C. Nuttallii of the Pacific states. From these trees it differs, however, in one particular; in our American Flowering Dogwoods, the fruits, which are gathered into close heads, are individually distinct, while in the Japan tree and in an Indian species they are united together into a fleshy strawberry-shaped mass, technically called a syncarp. Owing to this peculiarity of the fruit, botanists at one time considered these Asiatic trees generically distinct from the American Flowering Dogwoods, and placed them in the genus Benthamia, which has since been united with Cornus. In Japan, Cornus Kousa is apparently not common; certainly it is not such a feature of the vegetation in any part of the empire which we visited as Cornus florida is in our middle and southern states. Indeed, we only saw it in one place among the Hakone Mountains, and on the road between Nikko and Lake Chuzenji, where it was a bushy flat-topped tree not more than eighteen or twenty feet high, with wide-spreading branches. The leaves are smaller and narrower than those of our eastern American Flowering Dogwood; the involucral scales are acute and creamy white, and the heads of flowers are borne on longer and much more slender peduncles. Cornus Kousa also inhabits central China; it was introduced into our gardens several years ago, and it now flowers every year in the neighborhood of New York, where it was first cultivated in the Parsons' Nursery at Flushing. As an ornamental plant it is certainly inferior in every way to our native Flowering Dogwood, and in this country at least it will probably never be much grown except as a botanical curiosity.

The second arborescent Japanese Cornel, Cornus macrophylla, often known by its synonym, Cornus brachypoda, is also an inhabitant of the Himalayan forests, where it is common between 4,000 and 8,000 feet above the sea-level, and of China and Corea. It is one of the most beautiful of the Cornels, and in size and habit the stateliest and most imposing member of the genus. In Japan, trees fifty or sixty feet in height, with stout well-developed trunks more than a foot in diameter, are not uncommon, and when such specimens rise above the thick undergrowth of shrubs which in the mountain-regions of central Japan often cover the steep slopes which descend to the streams, they are splendid objects, with their long branches standing at right angles with the stems, and forming distinct flat tiers of foliage, for the leaves, like those of our American Cornus alternifolia, are crowded at the ends of short lateral branchlets which grow nearly upright on the older branches, so that in looking down on one of these trees only the upper surface of the leaves is seen. These are five to eight inches long and three or four inches wide, dark green on the upper surface, but very pale, and sometimes nearly white, on the lower surface. The flowers and fruit resemble those of Cornus alternifolia, although they are produced in wider and more openly branched clusters; and, like those of this American species, they are borne on the ends of the lateral branchlets, and, rising above the foliage, stud the upper side of the broad whorls of green.

Cornus macrophylla is exceedingly common in all the mountain-regions of Hondo, where it sometimes ascends to 4,000 feet above the sea, and in Yezo, where it is scattered through forests of deciduous trees, usually selecting situations where its roots can obtain an abundant supply of moisture. This fine tree was introduced into the United States many years ago through the Parsons' Nursery, but I believe has never flourished here. In the Arnold Arboretum, where numerous attempts to cultivate it have been made, it has never lived more than a few years at a time. Raised from seed produced in the severe climate of Yezo, Cornus macrophylla may, however, succeed in New England, where, if it grows as it does in Japan, it should prove a good tree to associate with our native plants.

Cornus officinalis, as it was first described from plants found in Japanese gardens, has usually been considered a native of that country. But, although it has been cultivated in Japan for many centuries on account of its supposed medical virtues, it is probably Corean. It may best be considered, perhaps, a mere variety of the European and Asiatic Cornelian Cherry, Cornus Mas, from which the Corean tree is best distinguished by the tufts of rusty brown hairs which occupy the axils of the veins on the lower surface of the leaves. In the botanic garden in Tōkyō, which includes the site of a physic-garden established in the early days of the Tokugawa dynasty, there is a group of trees of Cornus officinalis, which appear to have attained a great age; they are bushy plants, perhaps thirty feet tall, with bent and twisted half-decayed trunks

and contorted branches, which form broad, thick round heads, and in October were loaded with the bright, cherry-like fruit.

The Honeysuckle family is represented in Japan by seven genera and a large number of species, especially of Viburnum, but none of them can be considered trees, although Diervilla Japonica is occasionally almost arborescent in size and habit. The Japan Viburnums are now all pretty well known in our gardens, with the exception of Viburnum furcatum, a common northern and mountain plant, so similar to our American Hobble-bush, Viburnum lantanoides, that some authors have considered the two plants identical, and Viburnum Wrightii, a distinct, black-fruited species of northern Japan, where the American botanist, Charles Wright, detected it when the Wilkes' Expedition explored the shores of Volcano Bay. Viburnum furcatum is distributed through the mountain-regions of the empire and is one of the commonest species. Sometimes it grows to the height of fifteen feet; and it is always conspicuous from its great thick reticulate-veined, nearly circular leaves, which, in the autumn, turn to marvelous shades of scarlet, or to deep wine color. If this fine plant takes kindly to cultivation it will prove a real acquisition to our gardens.

Ericaceæ abound in Japan, where we miss, however, such familar American types as Kalmia, Oxydendrum and Galusaccia. Vaccinium is numerous in species, but, with the exception of the red-fruited Vaccinium Japonicum and the black-fruited Vaccinium ciliatum, they are not very abundant and are mostly confined to alpine summits, where the species are found, which, in the extreme north, encircle the earth; and Blueberries nowhere cover the forest-floor with the dense undergrowth which is common in our northern woods. The broad-leaved, evergreen, true Rhododendrons are not very common in Japan, where there are only two species, and, being mostly confined to high elevations, they nowhere make the conspicuous feature in the landscape which Rhododendron maximum produces in the valleys of the southern Alleghany Mountains, or Rhododendron Catawbiense makes around the summit of Roan Mountain, in North Carolina and Tennessee. Most of the Japanese Azaleas produce purplish or brick-colored flowers. In spite of all that travelers have said of the splendor of Japanese hill-sides at the time when the Azaleas are in bloom, it is doubtful if they compare in beauty with some Alleghany mountain-slopes when these are lighted up with the flame-colored flowers of Azalea calendulacea, or with the summit of Roan Mountain during the last days of June, when one of the greatest flower-shows of the world is spread there for the admiration of travelers.

None of the Japanese Azaleas, excepting, perhaps, Rhododendron Sinense, the Azalea Mollis of gardens, produce such beautiful flowers as those of such American species as Rhododendron (Azalea) viscosum, R. nudicaule, or R. arborescens. None of the Japanese Rhododendrons can be considered trees, although one or two of the deciduous-leaved species grow to the height of twenty or, possibly, thirty feet.

Andromeda Japonica, now common in our gardens, is properly a tree, for in the temple-park of Nara, where it grows in profusion, there are specimens at least thirty feet in height, with stout, well-formed trunks six or eight feet in length. Andromeda campanulata, another arborescent species, may be expected to become an ornament in our gardens of much interest and beauty; and as it grows as far north as the shores of Volcano Bay in Yezo, and up to over 5,000 feet in central Hondo, it may flourish in the climate of New England. Andromeda campanulata is a slender, bushy tree, sometimes thirty feet in height, with a smooth, light red trunk, occasionally a foot in diameter and thick, smooth round branchlets. The leaves are mostly oval, sharply serrate, firm, dark green above and pale yellow-green below, about three inches long and one inch wide; they are deciduous, and in the autumn, before falling, turn clear light yellow. The flowers are campanulate, pure white, and are borne on slender stalks in many-flowered drooping racemose panicles. By Japanese botanists it is spoken of as one of the most beautiful flowering trees in Japan, and we considered ourselves fortunate in securing a supply of ripe seed, for, so far as I know, this species is quite new to cultivation. There is but one other Japanese plant of this family which can pass as a tree; this is the handsome Clethra canescens, or, as it is more generally known in Japan, at least, Clethra barbinervis, a more recent name. It is a beautiful small tree, occasionally twenty-five or thirty feet in height, with a slender trunk, a narrow oblong head, long-stalked obovate pointed leaves, four to six inches in length and very dark green on the upper surface, and pale on the lower with hoary pubescence, which also covers the branches of the inflorescence and the outer surface of the calyx of the flowers. These are white and are produced in slender upright terminal panicled racemes six to twelve inches long, and open in succession for several weeks in August and September. In southern Yezo, Clethra canescens grows nearly down to the sea-level and along the mountains of the southern islands; in central Hondo, where it is a common forest-plant, growing usually near the borders of streams and lakes, it reaches an elevation of over 5,000 feet, so that there is reason to believe that this fine species will thrive in our climate if plants are raised from seed produced at high elevations, although up to the present time those which have been sent to the Arnold Arboretum have never been very satisfactory.

Clethra canescens grows, not only in Japan, but in China, Java, the Philippines and Celebes. *C. S. S.*

Foreign Correspondence.

London Letter.

THE Royal Horticultural Society has scored another success with its exhibition in the gardens of the Inner Temple, held on Thursday and Friday last. A magnificent display of plants and flowers, beautiful weather, excellent music, and pleasant lawns for a promenade, resulted in a great crowd of fashionable people, who must have found genuine enjoyment in the feast provided for them. The Orchids, Ferns, stove and greenhouse plants and hardy plants of all kinds were, on the whole, as well represented as in previous years. One might almost find fault with the crowded arrangement of the exhibits, notwithstanding the four spacious marquees provided. There was certainly enough material to fill twice the space. This is a common fault in plant exhibitions, one not easily remedied, perhaps, but it detracts from the enjoyment of the exhibits when one sees them crowded and jumbled together. There is a temptation to lift the choice plants out to give them breathing-room.

The principal exhibitors of Orchids were Sir Trevor Lawrence, Baron Schrœder and C. J. Lucas, Esq., the trade being represented by large and rich collections from Messrs. F. Sander & Co., Hugh Low & Co., Shuttleworth, Charlesworth & Co., James Cypher, B. S. Williams & Son and others. There were fewer new or startling plants shown than in previous years, but the grand specimens in perfect condition of all the most popular Orchids and many rarities besides, afforded abundant proof of the enormous popularity of Orchids in England and of the skill to grow them well. The principal attraction among Orchids was a marvelous specimen of Cœlogyne Dayana, from Baron Schrœder's collection. It stood on a pedestal five feet high and bore thirty racemes, from two to three feet long, clothed from base to apex with flowers. There were about fifty healthy pseudo-bulbs and nearly as many leaves on the plant, each two feet long and of the darkest, healthiest green. This fine plant was in a pot fourteen inches in diameter. The same exhibitor sent a beautiful specimen of the pure white-flowered variety of Sobralia macrantha, called Kienastiana, and a glorious example of the giant sdotted

variety of Odontoglossum crispum, known as Apiatum, bearing a spike of twenty flowers. Among the plants from Messrs. F. Sander & Co. I noted a distinct and handsome Odontoglossum, called Wattianum, which might easily be dubbed a natural hybrid between O. luteo-purpureum and O. Harryanum, the flowers having in form and color a resemblance to both those species. It obtained a certificate, as also did a very pretty pale-colored variety of Miltonia vexillaria, called Princess May. The hybrid Cattleya Wellsiana, raised by Messrs. F. Sander & Co. from C. superba and Lælia elegans, was shown by them in flower. I never saw Cypripedium Rothschildianum so good as was a specimen shown by Sir Trevor Lawrence. This fine, healthy plant bore two scapes each, with three magnificent flowers arranged one above the other. Sir Trevor also exhibited an exceptionally good example of Cochlioda Noezliana, which, so far, has generally disappointed cultivators by producing short, few-flowered racemes. At the Temple show, however, it bore racemes a foot long with twelve flowers, each flower one and a half inches across, their bright cinnabar-red color with blue-tipped column rendering them attractive. Cypripedium Volonteanum giganteum, from Messrs. Low & Co., bore flowers twice as large as the type and was awarded a certificate. An enormous-flowered variety of Cattleya Mossiæ, called Princess May, broad petaled and rich rosy mauve in color, with a grand lip, was shown by the same firm. Acropera Charlesworthii is a new species and may be called a gigantic A. Loddigesii. It bore a spike a yard long, with forty nodding flowers colored green, with brown spots and a pure white lip. Schomburgkia tibicina, Broughtonia sanguinea, Cyrtopodium Andersoni and Grammatophyllum Fenzlianum are some of the rarer plants which were represented by fine specimens. The Grammatophyllum is a grand Orchid, its arching spikes of large yellowish brown-spotted flowers being most effective. Cattleya Lawrenciana, with over forty flowers, was a beautiful picture, and there were dozens of huge well-flowered masses of C. Mossiæ, still one of the finest of all Cattleyas. Lælia purpurata maintained its reputation, both for floriferousness and variety as well as beauty, three named varieties obtaining certificates; there were also grand examples of the remarkably colored L. tenebrosa. Oncidium macranthum was represented by magnificent specimens, chiefly among the exhibits of Messrs. Charlesworth, Shuttleworth & Co., as also were the Lælias. They also exhibited a small plant of Cattleya intermedia alba, for which I heard them ask seventy-five guineas. Cattleya William Murray, a beautiful hybrid between C. Mendelii and C. Lawrenciana, was shown by its raiser, Mr. Norman Cookson, and was awarded a first-class certificate. Brassia Lewisii, a new species, with spikes nine inches long clothed to the base with elegant flowers, the sepals tail-like two inches long, colored pale sepia-brown, the petals small and brown, the lip lemon-yellow, with a few red spots, was shown by Messrs. Lewis & Co., Southgate.

Leaving the Orchids, the next in interest are the new plants, of which there were not many that were really striking among a large number of mediocre interest. Anthurium crystallinum variegatum, shown by Messrs. Pitcher & Manda, is a remarkable plant, the leaves being sometimes wholly creamy white or blotched and veined with that color on a deep moss-green ground. The yellow looks like etiolation, those leaves in which there is little or no green being evidently extremely delicate. It was awarded a first-class certificate. Nemesia strumosa, the pretty little south African annual, introduced last year by Messrs. Sutton & Co., was shown in flower, and was stronger and larger-flowered than when last exhibited. The plants were sturdy, a foot high, and the terminal clusters of flowers fully three inches across.

Sir Trevor Lawrence exhibited a collection of cut flowers and leaves of seedling and hybrid Anthuriums. There is considerable promise in these plants, and they will, I feel certain, amply repay the breeder who takes them in hand. Evidently they interbreed freely, some extreme crosses having already been obtained. The size of the spathes, their color and the form and color of the spadices are both varied and attractive. The named varieties exhibited were Laingii, with a spathe nine inches by six, white, with an erect soft pink spadix; Burfordiense, the spathe of which was eight inches by five, and colored deep crimson; Mortfontanense, with a large, leathery, bright crimson spathe and a thick white spadix; Lindeni, a pink-tinted Roezlii; Andreanum sanguineum, Edwardii roseum and Parisiente, which is a salmon-pink variety of A. Scherzerianum. There were also several distinct and beautiful unnamed seedlings originated at Burford Lodge. The same exhibitor sent Richardia Elliottiana, a yard high, with a spathe five inches across, and Cyrtanthus Huttoni, a Cape bulb with a stout scape two feet long, bearing an umbel of eighteen nodding tubular flowers one and a half inches long, colored rich orange. Messrs. F. Sander & Co. sent a group of new plants, including Strobilanthes Dyerianus, Alocasia Sanderiana magnifica, Anthurium albanense, Dipladenia atropurpurea, a beautifully flowered specimen, and Aristolochia gigas Sturtevantii, bearing two fine flowers, which were alluring enough in appearance, but their odor in the crowded close tent was vile. The beautiful hybrid Sweet-brier Roses raised by Lord Penzance were shown by him, and also by Messrs. Keynes, Williams & Co., of Salisbury. A bank of Messrs. C. Turner & Co.'s new Rose, Crimson Rambler, was universally admired; it is a really wonderful plant even for a Rose, growing like a Willow and flowering most profusely. I believe it is to be distributed this year, the lucky proprietors possessing 13,000 plants, which are nearly all booked at seven shillings and sixpence each.

Another beautiful new Rose is one which Messrs. Paul & Son, of Cheshunt, exhibited under the name of Carmine Pillar; it has single five-petaled flowers, four inches across, colored rich carmine, with a paler centre; the leaves are large, smooth, dark green, and the plant is almost spineless.

Several exhibitors sent fine examples of the hybrid Crassula jasminea × coccinea, which is dwarf, compact and very free-flowering; there were three distinct varieties represented, rubra, rosea and alba, described by their names. Celmisia spectabilis was shown in flower by Messrs. J. Backhouse & Son, York, and Iris Lortetii was sent by Mr. Van Tubergen, of Haarlem. It is impossible to speak too admiringly of this beautiful Iris. Mr. Van Tubergen informed me that it is much less difficult to manage than its near relative, I. Susiana, of which he also showed fine flowers. The large, elegant, broad, pale gray-lilac falls, striped and spotted with red-brown, and the soft gray-lilac color of the standards give the flowers a most refined appearance. They cannot easily be described. I can only say that this Iris, if it will do well under ordinary treatment, is certain eventually to become immensely popular. Cineraria maritima, var. aurea, is a prettily variegated plant, a foot high, well furnished with pinnatifid gray-green leaves, margined and splashed with creamy yellow. It is likely to prove a useful plant for summer bedding. Primula Reidii was shown in exceptional vigor by Mr. G. F. Wilson, and obtained a first-class certificate. It is one of the prettiest of all alpine Primulas when grown as Mr. Wilson exhibited it, a tuft of rich green leaves like those of the common Primrose, with three scapes nearly a foot high, each bearing six or eight campanulate flowers of the purest white, nearly an inch across, and very fragrant. Herbaceous plants were represented by magnificent collections from the leading growers, notwithstanding the unfavorable character of the weather we have had for such plants. Gloxinias, as shown by Messrs. Sutton & Sons, Cannell & Sons and others, were exceptionally good, while the Tuberous Begonias were simply a marvel. I have never seen any Begonias so fine as the magnificent group staged by Messrs. Cannell & Sons. Mr. Rivers showed a collection of Peaches and Nectarines in pots, all bearing fine crops of ripe fruit.

An exhibit of considerable interest was a collection of all kinds of plant-products, sent by Mr. James H. Veitch from

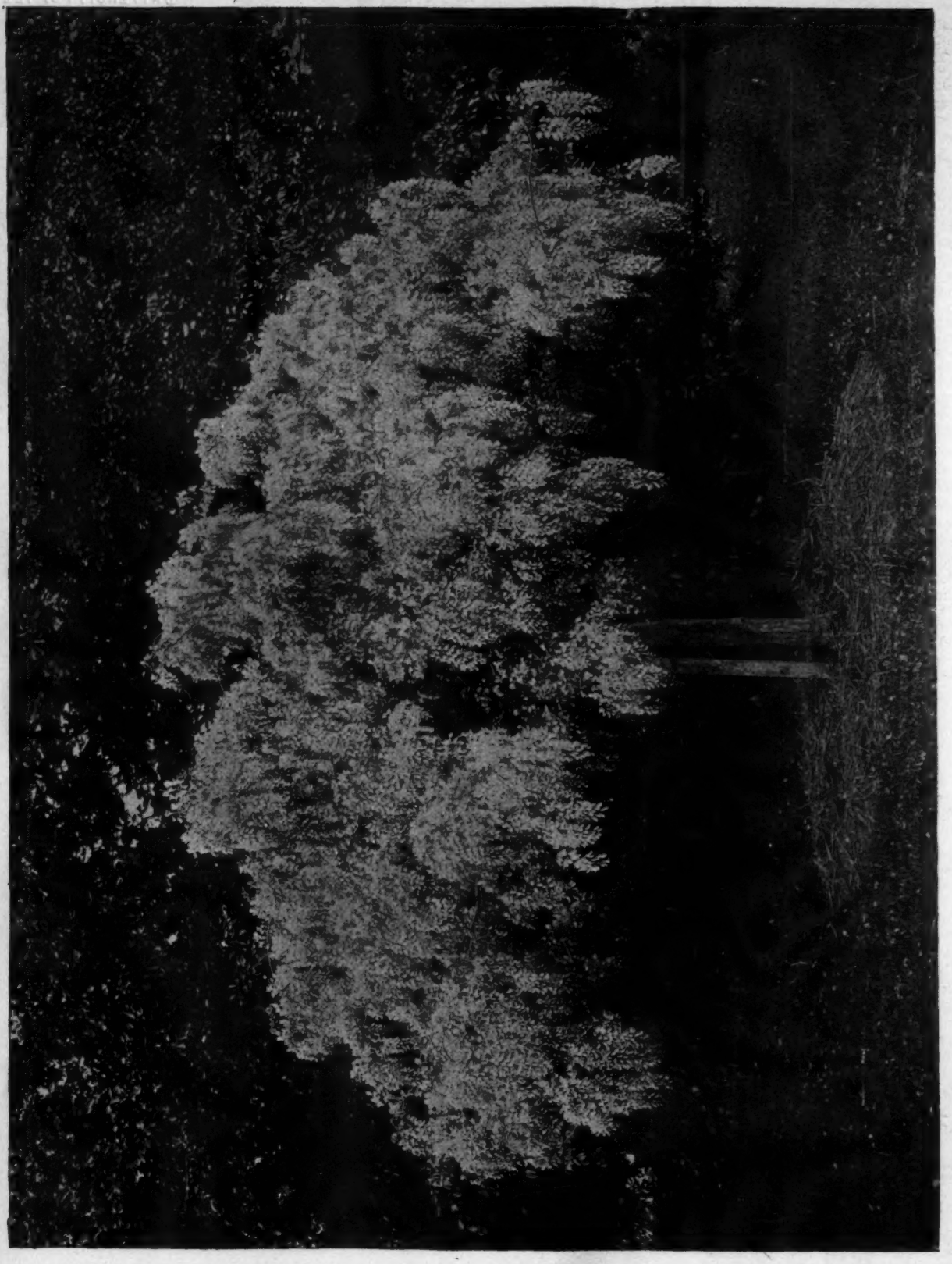

Fig. 31.—A Standard Wistaria.—See page 252.

Japan. It included samples of many kinds of wood, seeds, paper, various articles of clothing, jams, preserves, and other kinds of food, all named, and, in some cases, the process of manufacture described.

London. *W. Watson.*

Cultural Department.

The Wild Garden.

AT this time the wild garden is made beautiful by a large number of early-flowering native plants. The first plant that attracts attention at the entrance is a large clump of Geum triflorum, with fine dark green, healthy foliage. Its blossoms are produced in small umbels composed of three flowers. The calyx is dark purple and the petals white, purplish red at the extremities. The flowers never open out and are not showy; but this deficiency will be made up in a few more days by the plumose fruits. On the left of the little path the eye catches a beautiful combination of colors. A slight rise in the ground is dotted over with plants of Polemonium reptans and Viola cucullata alba. The nodding light blue flowers of the Polemonium make a pleasing contrast with the little white blossoms of the Violet. Further on the neat little Iris cristata is at its best, a mass of light blue blossoms. A few years ago we had only a few small plants, but they increased very rapidly, and now they cover a space twenty feet long by four feet wide. This Iris thrives best here in a moist, peaty soil and partially shaded position.

Near the Iris, and in the same damp, peaty soil, is a large plant of Saxifraga peltata in bloom. The pale pink flowers are produced on stalks from three to four feet long, and the lower parts of the reddish stalks are covered with long whitish conspicuous hairs. Later the peltate leaves, which rise from a creeping rootstock, will be showy and effective, and will attain a height of from three to four feet; the single leaf when fully developed measures about a foot across. The plant grows luxuriantly here in a boggy situation. Although it is one of the largest species of the genus, and one of the most vigorous growers, yet it is very seldom seen in our gardens. The Rue Anemone (Anemonella thalictrioides) is quite at home under a small Sassafras. The little umbels of whitish Anemone-like flowers are exceedingly pretty and last for some time in bloom. A few yards away from the Anemonella is a large plant of Camassia Fraseri, the Wild Hyacinth. Its pale blue racemes of flowers are most attractive, and although it is not so showy as Camassia esculenta, it is more hardy and stands the winter here without protection. Camassia esculenta is also in bloom and is a showy plant, thriving well in light sandy soil, but is not quite hardy and needs to be protected with a good covering of leaves in the winter.

Aquilegia Canadensis has taken possession of a rough, irregular mound made up of large stones, roots of trees and earth. It sows its seed in every direction on the mound, and the sturdy little plants that have come up in every crevice are loaded down with red and yellow flowers. Although this Columbine has not as large flowers as some other species of Aquilegia, they are more plentiful, and it is among the best of the Columbines.

On a dry bank fully exposed to the sun Waldsteinia fragrarioides is producing its yellow Strawberry-like flowers. In a slightly shaded place Tiarella cordifolia is throwing up racemes of white flowers. In low moist soil, under the shade of some White Pines, and close to some Osmundas, Cypripedium pubescens is flowering freely. This Cypripedium is one of the easiest to cultivate. Plants that I collected last year are blooming just as well as old-established ones.

Near a small pond, and under the shade of some trees, Houstonia cœrulea, with its pale blue flowers, is exceedingly pretty. A large clump of Marsh Marigold (Caltha palustris), with its dark green foliage, seems quite at home in the mud near the water's edge, and its rich yellow blossoms have been very effective for some time past.

Anemone Pennsylvanica is not a good border-plant, but there is no better plant for the wild garden. It requires plenty of room, as it soon spreads and covers a large piece of ground. It grows about a foot high, and at this time is very showy with its immense number of white flowers. It gives good satisfaction here planted on a low mound of good soil, where it gets plenty of light.

Thaspium aureum is a plant about two feet high, and its umbels of deep yellow flowers are very effective when massed together. It does best in a partially open position, and grows freely in good rich soil.

Cerastium arvense is a low-growing plant, now a sheet of sunny flowers, and well adapted for edging. Thermopsis mollis, with bright yellow flowers on stems about three feet high, makes a splendid border-plant, and is equally good for the wild garden.

Jacob's Ladder (Polemonium cœruleum), with flowers in bright blue panicles on stems two feet long, makes a conspicuous object now, and so does Amsonia Tabernæmontana, a plant about four feet high, with light blue flowers, one inch across, and in large terminal panicles.

On a dry bank the wild Crane's-bill (Geranium maculatum) is growing beautifully, and its pale purple flowers are very pretty. Although it is a very common plant, yet there are very few plants that are more effective when it is seen in a right position.

Botanic Gardens, Cambridge, Mass. *Robert Cameron.*

Plants in Flower.

THE Oriental Poppies, at present, with their vivid color, dull all other flowers in the garden. Noble flowers these, and with a foil of graceful foliage. Fortunately, their season is brief. Otherwise they are such effective flowers that they would fill a popular want for the big and bizarre and the landscape, or, at least, our gardens would blaze in fiery monotony. These are flowers of which one can gain a surfeit in a moderate time. The plants are perfectly hardy and readily grown from seed, from which they show considerable variation both in coloring and in markings or blotches. They die down after flowering, and it is well to plant some strong-growing plant near them to cover vacant space. In late summer stock is readily increased by root-cuttings.

The Roses are daily becoming more interesting. I noted last year in GARDEN AND FOREST a so-called Rosa polyantha remontant as having produced flowers in ninety days from seed. The plants proved perfectly hardy without protection last winter, not even the tops being cut down in the least. They are now strong bushes, two to three feet high, and full of good foliage and numerous buds, many of which are expanded. The flowers are single and double, and range from white to deep pink or rose. The most forward plant is now charming with numerous light rosy single flowers something over an inch in diameter. As implied by the name, this Rose gives successive crops during the season, and is well worth the attention of cultivators who enjoy unconventional flowers.

The Burnet Rose (Rosa pimpinellifolia or R. spinosissima) is a favorite of mine in or out of flower. It makes neat little bushes, covered with dainty very dark green leaves, very distinct and effective at all seasons. At present it is showing its fragrant cream-colored flowers, which are as handsome as fugacious. I believe this is a very common British plant. Mine are from seed gathered by a friend on the Tenby sands.

Rosa multiflora is showing its racemes of small flowers quite in contrast to Mr. Dawson's seedlings. One of these seedlings, Multiflora × Miss Hazzard, with pure white single flowers, seems to me specially lovely, while the one named Dawson is a charming picture at present, with its clusters of semi-double pink flowers, the bush on a low fence making a cascade of dainty color.

Calochortus pulchellus is the strongest-growing and earliest-flowering of the dozen northern California species which I have tried. Its abundant clear yellow flowers are of striking beauty, and among the most attractive flowers now in bloom. These Mariposa Tulips are, I fear, more familiar to us as catalogue illustrations than as realities in the garden. There seems to be a general haziness about cultural directions and their requirements here, and, as far as I can learn, they are not usually cultivated successfully outside. In a dry border, under the lee of the house, they were perfectly hardy and were usually without even a snow-covering last winter. Under this condition they apparently all lived and are in bud, but with varying degrees of vigor. The future treatment will be to allow the border to remain perfectly dry during the balance of the season. These native bulbs are so handsome that hints from those who have succeeded in their cultivation for successive seasons would be very useful.

The Spanish Irises are now in season, and are among the brightest of the family and not to be omitted from the smallest collection. The usual varieties are the light lavender, with orange blotches on the falls, the self-yellow, I. Lusitanica, and those with brown markings, I. sordida, and those with white standards. There is in the garden a form of I. Lusitanica, from Tangiers, I believe, which made six inches or more of leaf-growth last fall, and which, later, was badly cut. It seems a strong plant, but, like I. Tingitana, is evidently a shy bloomer.

Hardy Gladioli, one of the most interesting flowers at this moment, is one of Mr. Whittall's finds of last year, a hardy

Gladiolus with pink flowers—purplish pink when first opening. This flowers on erect spikes at about eighteen inches high and is a very welcome and attractive gain to the borders. It succeeds in flower the purplish and blue forms with lax scapes sent out by Herr Leichtlin as G. Kotschyanus, but, I believe, determined to be G. Armeniacus.

The larger Water-lilies are now in blooom, after some stimulus of warm weather. Established plants of N. alba candidissima and N. albida opened their flowers together this morning. The former variety has long been esteemed as one of the best white flowering kinds. Watching the latter as it expanded from a beautiful cup-shaped bud to its perfect stage, I am confirmed in my opinion, formed last season, that it is quite the handsomest of hardy white Nymphæas.

Elizabeth, N. J. *J. N. Gerard.*

Barrenworts.

THE Epimediums, or Barrenworts, possess so many points of merit in foliage and flower, and are so easy of culture, that it is surprising that they are neglected so generally. The genus has representatives in Europe, Asia and Africa, with one doubtful American species. They are all of medium size, seldom exceeding one foot in height, with underground stolons by means of which broad matted tufts are formed. All of the species bloom in spring or early summer, the flowers appearing in some cases just in advance of the foliage, and with the fresh young leaves in others. The foliage of these plants is interesting and beautiful and varies much in form, color and texture with the different species. In all of them, however, the leaf-stalks are stiff and wiry, and in early spring as the leaves are expanding the general effect of the plants is almost as graceful as that of the Maidenhair Ferns. The young leaves are particularly striking in the variety of their color, combining as they do rich shades of flesh-color, purple and red, with the light greens. They gradually assume a deeper shade of green with age, although they are often margined with flesh-color and red throughout the summer.

The flowers are usually star-shaped, the outer petals falling soon after they open, and the inner ones, which are convex on the reverse side, spread out horizontally above the outer petal-spurs, so as to give the effect of a star within a star. Epimedium alpinum, a European species, bears from twelve to twenty flowers of white and crimson in a lax panicle in May, each panicle borne on a stem nearly a foot long. The flowers expand with the foliage, and their depth of color is intensified by the contrast in color. E. niveum during the latter half of May bears dense panicles of pure white flowers, and its variety, Roseum, is showily tinged with pink. The flowers, though smaller than those of E. alpinum, are lifted well above the leaves. E. macranthum, the earliest to bloom, produces the largest flowers of all, some of them being an inch across, with the outer petals a lavender-purple and the inner ones French pink. The plant in full bloom produces a very remarkable effect. E. sulphureum blooms later and is at its best in early June, bearing deep lemon-colored flowers in dense panicles, which are gracefully overarched by the foliage. The Epimediums do not seem to be particular about soil, but they thrive best in sandy loam and in partial shade, and they are particularly effective when massed in a rockery.

Reading, Mass. *J. Woodward Manning.*

Correspondence.

From a Garden in Northern California.

To the Editor of Garden and Forest:

Sir,—California has seldom had a more backward spring than this year, and many garden-plants have done poorly. Bulbous plants have, however, prospered under the cool weather and frequent rains, and Hyacinths, Narcissus and Tulips did wonderfully well, as also the great variety of Californian bulbs in my garden. For the native bulbs, with but few exceptions, a porous, not overstimulating, soil, first-class drainage, and not too much watering, are essential. I have had two partial failures this spring, one due directly to poor drainage, the other to attacks of a mildew. Calochortus splendens, from an arid locality, was killed to the ground by the fungus. Other forms of C. splendens from a cooler climate were little injured, and C. luteus and C. Weedii from places close at hand were untouched. In previous years other Calochorti from the arid regions, such as C. Nuttallii and C. macrocarpus, were attacked. C. venustus, as a rule, is mildew-proof; also the Calochorti of the C. pulchellus type (Cyclobothras). As the fungus clearly comes on the bulbs, it would, I believe, be a wise precaution to use some wash, such as sulphate of copper, to disinfect them before planting.

For the first time I have been successful with Fritillaria pudica. The soil is a sharp river sand and loam, and the drainage is good. My experience has been that no soil equals a sharp sandy one for all of the Calochorti like C. pulchellus, C. albus, C. lilacinus, C. Benthamii and others. C. amœnus flowered for the second season this year. It is between C. albus and C. pulchellus, and its satiny dark pink flowers are charming. Indeed, there is no more exquisite coloring in any Calochortus.

I have long looked upon our native Cypripedium montanum as rather hard to grow, but must reverse this opinion. A large number of clumps, some collected last fall and some a year ago, have all bloomed freely, and will compare with the best plants in their native homes. The soil is a rather heavy clay, with sand and mold mixture, the situation cool and for the greater part of the day shady.

The popular flower festivals in the southern portion of our state are held at a time when we could scarcely show a Rose in this section. The Banksia Roses do finely throughout the state, and just now are beautiful. These Roses will quickly clamber over a house. The Noisettes are highly satisfactory here; also Maréchal Neil and Cloth of Gold. The old favorite, Gloire de Dijon, and the equally good Reine Marie Henrietta do splendidly, and among the climbers there are many more of the same class that are hardy and beautiful.

Ukiah, Calif. *Carl Purdy.*

New Cypripediums.

To the Editor of Garden and Forest:

Sir,—Of more than 500 plants of the noble Cypripedium Chamberlainianum which I have seen, the variety Magnificum is the finest and largest both in foliage and flower. The plant measures two feet four inches across, and the leaves, which are faintly tessellated, are three inches broad. The polyflorous scape is pubescent; the flowers are borne one at a time, and each one measures over four inches across the petals. The dorsal sepal is an inch and a half across, pale green, shading to primrose-yellow on the margin, with ten dark brown rays, and pilose on the reverse side. The inferior sepal is pale green, with brown rays. The petals are pale apple-green, with rows of brown-purple dots, and are twisted in a reverse direction. The lip is two inches long, crimson, with the infolded lobes, base and the border of the aperture a pale yellow, the whole specked with carmine. The staminode is a deep glossy green. The plant of C. Germinyianum aureum resembles the type, but the flowers are larger; the dorsal sepal an umber-brown, bordered with dull orange, petals vinous-purple on the superior half, and dull orange on the inferior half, dotted with red near the base; the lip a sombre orange, dotted inside with brown, the staminode yellow.

Orange, N. J. *Robert M. Grey.*

Marica Northiana.

To the Editor of Garden and Forest:

Sir,—Apropos of Mr. Gerard's recent valuable notes on the Iris family, it may be interesting to note that Marica Northiana has been in flower here for the last two months, and it proves a good bloomer in a cool greenhouse, without special culture. Its flowers are fugacious, lasting only a day, but are of exquisite beauty and fragrance, and produced in great numbers. The habit of growth is exceedingly graceful, and it seems a desirable plant for amateurs to cultivate.

My plant came from the Bermudas, where it was called the Bermuda Iris, but it was originally introduced into England from Brazil about 1790.

Braintree, Mass. *Curtis A. Perry.*

Recent Publications.

The Hawks and Owls of the United States in their Relation to Agriculture. Prepared under the direction of Dr. C. Hart Merriam, Ornithologist of the United States Department of Agriculture, by A. K. Fisher, M. D., Assistant Ornithologist. Washington, 1893. 8vo, 201 pp., 25 colored plates.

The Department of Agriculture has done wisely in presenting so attractively in Bulletin No. 3 of the Division of Ornithology and Mammalogy the results of Dr. Fisher's studies on the food of a class of birds usually reckoned as the enemies of the farmer, but which actual investigation shows to be his best friends. By careful examination of the contents of the stomachs of 2,700 specimens of the different hawks and owls of the country, it is proved beyond a doubt that by far the

larger part are positively beneficial, and the folly of offering bounties for their indiscriminate destruction, as has been done in several states, is conclusively shown. Only six of the seventy-three species and subspecies found within our territory can be called positively injurious. Of these, three are so rare that they need not be considered in their economic relations, leaving only three, namely, Cooper's Hawk, Sharp-shinned Hawk and Fish Hawk, that can be considered the enemies of man. The remainder are either wholly beneficial or mainly so, destroying a vast quantity of harmful mammals and insects, and only exceptionally committing depredations on game or poultry. As an instance, the case of the two common hawks, universally detested by farmers, under the name of Hen Hawks (Buteo borealis and B. lineatus), may be cited. An examination of 562 stomachs of the former showed only fifty-four to contain the remains of poultry or game birds, and of 220 stomachs of the latter, only three contained such remains. The great preponderance of food was found in both cases to be mice, insects and other noxious animals. It will take time for the average farmer to understand that his prejudices must give way before such significant facts as these, but it is to be hoped that their plain statement in this volume may have some effect. Certainly the knowledge of them should have the widest possible circulation.

The illustrations by the Ridgways are excellent, the descriptions in plain, untechnical language, and the accounts of the habits full and interesting, making the work one of the best contributions to American ornithology that have recently appeared.

The Columbian Exposition.

Rhododendrons.

RHODODENDRONS have made the most conspicuous displays on the grounds during the first days of June. Nothing can be more showy than a mass of Rhododendrons, and, unlike many other showy plants, they carry an air of massiveness and stability which makes them impressive. They are the most architectural of the plants which can be made to endure our northern climate, and it is, therefore, a happy thought with Mr. Olmsted that he should have banked nearly six hundred of them against the long architectural terraces in the basin, or the magnificent space which lies between the Manufactures and Agricultural Buildings, headed by the noble Administration Building, and constituting what is known as the Court of Honor. The plants used in these banks comprise a long list of varieties, and the sizes and colors are arranged with bold effect. The masses are four in number, two lying against the terrace of the Manufactures Building on the north of the lagoon, and two against the Agricultural Building on the south. The plants are entered as competitive exhibits, although they are made to form a part of a landscape picture. Of the plants in these long masses, Anthony Waterer has contributed 229; Moser, of Versailles, sixty-two, and the Belgian commision 267, making a total of 558 plants, nearly all well bloomed.

Unfortunately, the other Rhododendrons are widely scattered. The greater part of the exhibits are thrown into the southern portion of the island with little reference to landscape-effect, a large formal plantation extends across the north front of the Woman's Building, and some of Moser's best specimens have been flowered under the dome of the Horticultural Building, where they have attracted great attention. The best effect in these various plantations, all things considered, is undoubtedly obtained in the terrace-banks in the basin, although it has been necessary to screen them from the sun by a temporary awning. Aside from these plants which Mr. Olmsted has used for architectural effects, the Rhododendrons are under the immediate charge of the Horticultural Department.

The Rhododendron exhibits may be roughly grouped under two classes for the purposes of this account — small or young plants, and large ones (including standards). The small plants are shown by the Boskoop (Holland) Nursery Association in 102 varieties; Blaouw & Co., Boskoop, Holland, fifty-six varieties; W. Van Kleef & Sons, Boskoop, thirty-four varieties; Parsons, Long Island, sixteen varieties; T. J. Seidel, Dresden, five new varieties, and a small collection by Ellwanger & Barry. The plants in these collections range from one to three feet high, and there is little or no attempt to train them to a single trunk, although Parsons' plants, which are the only American-grown Rhododendrons in the entire exhibition, are somewhat larger. These American plants are not yet in bloom, and the buds of some of them are destroyed, evidently by the winter. A conspicuous variety in the Dutch exhibits is the mauve R. Catawbiense. This is used to excellent effect in the Kleef exhibit as a backbone, or centre, of a long and thick clump.

There are some excellent specimens of standard Rhododendrons shown by John Waterer and by Moser, some of the tallest in the former collection standing eight feet high. Very strong plants are shown by Anthony Waterer, Knap Hill, in ninety-three varieties and fifteen seedlings; by Moser, of Versailles, in sixty-nine varieties; Croux & Son, Sceaux, near Paris, forty-nine varieties; John Waterer, forty-one varieties; Pitcher & Manda, fourteen varieties, and the Belgian Commission, fifty varieties. The Belgian plants are contributed by Ch. Vuylsteke, Desmet Brothers, Alexis Dallaire and the Horticultural School, all of Ghent or its vicinity. It is surprising to note the liberality with which the European nurserymen have contributed in many ways to the Exposition, and one must admit that they have given it a decided and unique value by the magnificent shows of Azaleas and Rhododendrons. Some of Moser's plants are fifty years old and are worth as many dollars, and some of the large plants in the John Waterer collection sell in England for seventy-five dollars each. The French plants, especially those from Moser, are the most perfect in form of any on exhibition, and the John Waterer plants are the largest, but, taken all in all, considering hardiness a prime factor, no collection surpasses that of Anthony Waterer, if, in fact, it equals it. Without exception, the collections of all foreign exhibitors are marvels of vigor and profuseness of bloom, especially when one considers the journey to which they have been subjected and the fact that all were planted this spring.

Among so many meritorious varieties, it is impossible to mention all those which possess special charms. If any one variety can be said to be better than others the merit must fall to Everestianum, a hardy variety with magnificent trusses of rose-lilac crimped flowers. H. Waterer, who represents his father, Anthony Waterer, in America, considers the following to be especially valuable for this country because of their hardiness: Everestianum, Purpureum Elegans, Album Grandiflorum, Album Elegans; Mrs. Shuttleworth, scarlet, light centre, spotted; Mrs. Milner, crimson; Lady Clermont, rose, deeply blotched; Sappho, white blotched maroon; James Macintosh, rose; Edward S. Rand, deep scarlet; Guido, red; H. W. Sargent, crimson; Charles Dickens, dark red; Charles Bagley, cherry red; Lady Armstrong, pink rose, spotted; Kettledrum, purplish crimson. Among the novel or little-known varieties of special merit, Mr. Waterer mentions Memoir, white; Martin Hope Sutton, scarlet; Florence, pink, light centre; Sappho; Edward S. Rand; Morion, rose, blotched; H. W. Sargent; Sylph, pink; Charles Fisher; Kettledrum. Mr. Moser, who represents his father at Chicago, considers the following to be the best varieties, having special reference to American conditions: Everestianum; Blandyanum, brilliant red and a profuse bloomer; Lady Eleanor Cathcart, salmon-red; Caractacus, red; Album Elegans, white; Princess Mary of Cambridge, light rose, with darker border; Catawbiense Boursault, deep mauve; Annica Bricogne, clear mauve; Catawbiense Alba, white.

Among the varieties which seem to attract most attention are Blandyanum, Roseum Elegans, Catawbiense, Caractacus, Helen Waterer, Everestianum, Michael Waterer, Strategist, Fastuosum flore pleno, Cetewayo, the nearest approach to a black Rhododendron; Lady Eleanor Cathcart, Queen, Lord Wolseley, Frederic Waterer, Princess Mary of Cambridge, Old Port, Princess Louise, Notabile, Cynthia, Matchless and Helène Schiffner, an elegant new white by T. J. Seidel. The excellent specimen plants of Moser and Croux have excited great interest because of their bold position by the Woman's Building, and the former have the great merit of being distinctly labeled.

Rhododendrons are so much confused by hybridization that it is impossible to refer many of the prominent kinds to given species. Those who have been long familiar with the varieties, however, become very expert in judging of the blood and hardiness by the appearance of the leaves. The hardy kinds are those in which our native Rhododendron Catawbiense is the chief or only component. These are distinguished by the leaves, which are broad and obtuse, or, at least, not conspicuously pointed. Everestianum is probably pure Catawbiense, and it shows its parentage in the lilac flowers as well as in the foliage. The variety which the nurserymen sell as Catawbiense, and which I have mentioned in this letter, has flowers of a similar shade, and it is supposed to be a straight development from the species. The greater part of the named Rhododendrons partake largely of R. Ponticum blood. This species originally had darker flowers than our native plant, and the leaves are narrower and more prominently pointed. It is native to western Asia, and is tender in our northern states. R. arboreum, a Himalayan species, is supposed to have en-

tered into the cultivated varieties. Our native R. maximum has received some attention from nurserymen, but it has not yet entered largely into the named kinds. One of the most interesting displays is a collection of fifty-five large plants in boxes of R. Californicum about the Washington State Building. This species has recently been designated as the state flower by the Legislature of Washington. The plants were received late in May in rather poor condition, having been three weeks on the way in a dark car, but they are now rallying and are beginning to bloom. The species occurs locally in Washington, especially about Seattle and the base of Mount Hood. It forms dense plantations, four to eight feet, and even fourteen feet, in height. The flowers vary from pink-white to rose.

Altogether, this is undoubtedly the best display ever held west of the Alleghanies. Although the Rhododendron is a captious plant in our climate, it must be remembered that one of the best species is native here, and that many varieties can be relied upon with tolerable certainty, even in trying places.

There seems no reason why American nurserymen should not originate races which will be perfectly hardy and happy in our climate.

Chicago, Ill. *L. H. Bailey.*

Notes.

Young fruit-trees which were properly transplanted last autumn had fine earth very compactly placed about their roots, but just now there is danger that this soil may become hardened and crusted, which condition is altogether unfavorable to growth. It is important, therefore, to keep the ground about newly set trees not only clean, but thoroughly pulverized on the surface.

There are many attractive shrubs and small trees in bloom in Central Park at the present time, including Philadelphuses, several of the Thorns and Viburnums, but none of them are more attractive than Chionanthus Virginica. The delicate snow-white flowers hang in abundant loose panicles from every spray, and the long slender petals produce a lace-like effect which makes the common name of Fringe-tree most appropriate.

At the Maine Experiment Station a modified form of the mixture known as "Eau celeste," consisting of two pounds of copper sulphate, two and a half pounds of carbonate of soda, one and a half pints of ammonia and thirty gallons of water proved the most effective means of checking the Apple-scab. The experiments emphasized the value of spraying early in the season before the blossoms open and applying the fungicide repeatedly during the summer.

At the annual meeting of the Linnæan Society, recently held in London, the Linnæan medal was presented to Professor Oliver, for many years the curator of the Kew Herbarium, a position from which he has now retired, although he still continues to render marked service to botany and horticulture in his ready and valuable assistance to those who seek the benefit of his vast experience and great knowledge of the plants of all parts of the world.

One of the largest Redwood-trees ever felled in California, cut near the Eel River, about ten miles from Scotia, was recently sent to Chicago, where it will be exhibited. The trunk was seventy-seven feet in circumference at the base, 417 feet in length, and at a height of 207 feet it was nine feet in diameter. The section cut out for exhibition is twelve feet high and sixty-three feet in circumference. The entire tree contained 400,000 feet of lumber, solid measurement, and cut up into 305,000 feet of merchantable lumber. Only the shell of the section cut out has been sent to the Columbian Exposition, where it will be put up in the shape of a room.

In *Meehans' Monthly*, for June, the editor states that out of 100,000 flowering plants known to botanists, possibly not one-tenth of the number have any odor. The large majority of plants are, in fact, scentless. In many large genera there are only one or two fragrant species; for instance, in the Mignonette family, of fifty known species only the one in our garden has any odor. Among one hundred species of Violets there are not a dozen fragrant ones. In other large genera, as for example in Begonia, the scentless varieties are as one hundred to one, and among our wild flowers the sweet-smelling ones are comparatively rare.

The first number of the *Journal of the Kew Guild* speaks of the destruction of the old Chilian Pine, Araucaria imbricata, which had been failing for several years and which was removed last autumn. In 1792 Archibald Menzies, navy surgeon and botanist, was dining with the Viceroy of Chili, when at dessert some nuts were brought to the table which were unknown to him. He sowed a few of them in a box of soil; they germinated on board ship, and he finally brought five plants home to Kew, which were the first ever seen in England. Of these the old specimen which was destroyed last year was one, so that when it died it was exactly one hundred years old.

The usual supply of pineapples from the West Indies is, for the first time this year, supplemented by the Florida crop, so that this fruit was never before so abundant in our market. Although this fact has had the effect of cheapening the price of strawberries, the latter fruit has held better prices during the past week, good strawberries selling for fifteen cents a quart as against ten cents a week ago. There is a limited supply of Florida canteloupes at thirty-five and forty cents apiece, and the best peaches from the south, and a few from California, are held at sixty cents a dozen. Niagara grapes, from Georgia, are forty-five cents a pound. New California apples command fifty cents and California apricots twenty-five cents a dozen.

The editor of the *Rural New Yorker* is pleased with the conduct of the Papaw (Asimina triloba) on his grounds. His specimen was taken from the woods some twenty years ago, and grows in wretchedly poor soil and bears an immense crop of fruit, which he chooses to call the northern banana, every year. Not a bud of the tree was killed by the cold last winter, which reached twenty degrees below zero. It was in full bloom about the 20th of May, with flowers as pretty as those of an Akebia, and the tree assumes a symmetrical shape, while the large leaves give it a peculiarly tropical effect. He adds that the fruit is liked by many persons. Some years ago Monsieur Charles Naudin wrote to this journal that the fruit of some of the Papaws which he was cultivating was to his taste delicious, and altogether the best of the wild indigenous fruits of North America. Unfortunately, the fruit contains many large seeds, which leave the proportion of edible pulp too small to make it valuable. But, then, this Papaw has never been improved by cultivation, and when we remember how our orchard-fruits have been altered by selection and hybridizing from their original types, it would seem that the effort to improve this fruit was worthy of experiment.

A bulletin has recently been issued by President Mills, of the Ontario Agricultural College, offering a short summer course of instruction to the teachers of that province in agriculture and the sciences most closely related thereto. Since farming is the main industry in Ontario, President Mills argues that it is the duty of the public schools to consider to some extent that fact, so that the children can be instructed, not only in the elements of general education, but in some of the principles that underlie the successful practice of the industry by which most of them will have to earn a living. This short course is provided for the teachers in the belief that they may be enabled to give valuable instruction in agriculture by plain lectures to children in conversations on soils, plants and animals, so simple that the lower classes in a public school may understand them, so attractive as to interest all, and of such a character as to benefit the children, whatever their occupation may be in after life. The course will extend throughout the month of July. The forenoons will be devoted to lectures, and the afternoons to botanical and geological excursions in charge of an officer, together with practical work in laboratories, with observation trips to gardens, fields and experimental plots.

We have received from Mr. Joseph Meehan, of Germantown, a spray of Cornus Kousa, which is just now in full flower. This plant, generally known in nurseries as Benthamia Japonica, blooms every year, and the large white bracts have more substance than those of our Flowering Dogwood, which it so much resembles. The bracts are not so purely white as those of Cornus florida, but they appear two weeks later than on our native plant, and after the bright green leaves have attained full size. Mr. Meehan also sent a flowering branch of the beautiful Pterostyrax hispidum, a figure of which was published in Garden and Forest, vol. v., page 389. The tree from which the spray was taken is now nearly twenty feet high and has borne flowers for several years. It is a strong-growing tree and of pleasing outline, and just now it is covered with abundant white flowers in pendulous racemes. A branch of Styrax Obassia, which came with the above, had nearly passed out of flower, but it still showed the racemes of large white flowers, standing out somewhat horizontally and not drooping, as in the case of the Pterostyrax. The largest specimen in the Meehan Nurseries is fifteen feet high, and yet it never flowered until this year. A smaller one, only eight feet in height, also bloomed for the first time.